K090239

Attachment D
510(k) SUMMARY

CONTACT

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Prodesse, Inc.
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Waukesha, WI 53186

APR 16 2009

NAME OF DEVICE

Trade Name:	ProGastro Cd Assay
Regulation Number:	21 CFR 866.2660
Classification Name:	reagents, Clostridium difficile toxin

PREDICATE DEVICE

K923463 – TechLab C. difficile toxin/Antitoxin Kit
K081920 – BD Geneohm CDiff Assay

INTENDED USE

The ProGastro™ Cd Assay is a Real Time PCR *in vitro* diagnostic test for the qualitative detection of toxigenic *Clostridium difficile* nucleic acids isolated and purified from liquid or soft stool specimens obtained from symptomatic patients. This test targets the *Clostridium difficile* toxin B gene (*tcdB*) and is intended for use to aid in the diagnosis of toxigenic *Clostridium difficile* infections.

PRODUCT DESCRIPTION

The ProGastro Cd Assay detects toxigenic *Clostridium difficile* and an Internal Control by a process of nucleic acid extraction from patient specimens followed by PCR amplification and detection. Following collection of a soft or liquid stool sample from a symptomatic patient, a portion of the sample is diluted in Stool Transport and Recovery (S.T.A.R.) Buffer and the solids separated via centrifugation (Stool Clarification). The Internal Control is added to the sample prior to extraction to monitor for PCR inhibitors that may be present. The nucleic acids from the sample are extracted and purified using the bioMérieux NucliSENS easyMAG automated extractor. Nucleic acids are added to the *C. diff* Mix for subsequent PCR amplification and detection using the Cepheid SmartCycler II.

The *C. diff* Mix contains oligonucleotide primers and probes that target the *tcdB* gene of toxigenic strains of *C. diff*. The probes are dual-labeled with a reporter dye attached to the 5'-end and a quencher dye attached to the 3'-end (see table below). During PCR amplification the primers and probes anneal to the template (if present) followed by primer extension and template amplification. The 5'-3' exonuclease activity of the Taq polymerase cleaves the probe thus separating the reporter dye from the quencher and generating an increase in fluorescent signal. The amount of fluorescence at any given cycle is dependent on the amount of amplification product present. The SmartCycler II instrument and software monitors the process, interprets the data, and presents a report upon completion.

Analyte	Gene Targeted	Probe Fluorophore	Absorbance Peak	Emission Peak	Instrument Channel
Clostridium difficile	*tcdB*, Toxin B	FAM	495 nm	520 nm	FAM
Internal Control	NA	Quasar 670	647 nm	667 nm	Cy5

SUBSTANTIAL EQUIVALENCE

Clinical Performance

Performance characteristics of the ProGastro Cd Assay were established during a prospective study at 3 U.S. clinical laboratories from July through October 2008. Samples used for this study were leftover raw stool specimens that were collected for routine *Clostridium difficile* testing from patients over two years of age by each site. The reference method was tissue culture cytotoxin assay (CTA). Demographic details for this patient population are summarized in the following table:

Age	Number of Subjects (Percentage of Total)
2 – 5 years	60 (7.8 %)
6 – 21 years	163 (21.1%)
22 – 59 years	292 (37.9%)
≥ 60 years	256 (33.2%)

A total of 771 raw stool samples were tested with the ProGastro Cd Assay and by CTA. None of the 771 samples were inhibited when tested with the ProGastro Cd Assay.

		CTA			
		Positive	**Negative**	**Total**	**Comments**
ProGastro Cd Assay	**Positive**	66	37[a]	**103**	Sensitivity 91.7% (83.0% - 96.1%) 95% CI
	Negative	6[b]	662	**668**	Specificity 94.7% (92.8% – 96.1%) 95% CI
	Total	**72**	**699**	**771**	

Discrepant analysis for samples where ProGastro Cd Assay and CTA results were in disagreement was performed using a predetermined algorithm including a molecular (PCR) test (which targeted a different region of the *tcdB* gene than that of the ProGastro Cd Assay) followed by bidirectional genetic sequencing, enzyme immunoassay (EIA), and culture followed by PCR and bidirectional sequencing.

[a] *34 samples positive by discrepant analysis. Of these 33 were positive by sequencing, and one (1) was positive by culture followed by sequencing.*

[b] *Four (4) samples positive by discrepant analysis. Of these, one (1) was positive by sequencing, one (1) was positive by EIA, and two (2) were positive by culture followed by sequencing.*

Reproducibility

The reproducibility of the ProGastro Cd Assay was evaluated at 3 laboratory sites. Reproducibility was assessed using a panel of 6 simulated samples that included medium positive, low positive (near the assay limit of detection) and "high negative" samples. Panels and controls were tested at each site by 2 operators for 5 days (6 samples and 4 controls X 2 operators X 5 days X 3 sites = 300). The overall percent agreement with the expected result for the ProGastro Cd Assay was 99.0%.

Panel Member ID	Site 1			Site 2			Site 3			Total Agreement with expected result (%)	95% Confidence Interval	Overall Average C_T Value	Overall %CV
	Agreement with expected result	AVE C_T	%CV	Agreement with expected result	AVE C_T	%CV	Agreement with expected result	AVE C_T	%CV				
High Negatives[1]	19/20	35.2	1.52	20/20	35.3	1.05	20/20	35.5	1.30	59/60 (98.3%)	91.1% - 99.7%	35.3	1.35
Low Positives	19/20	36.2	1.04	20/20	36.2	1.30	20/20	36.3	0.75	59/60 (98.3%)	91.1% - 99.7%	36.2	1.05
Medium Positives	19/20	34.1	0.99	20/20	33.8	0.89	20/20	33.9	1.07	59/60 (98.3%)	91.1% - 99.7%	33.9	1.04
Positive Control	10/10	36.7	3.45	10/10	34.6	1.03	10/10	34.1	1.22	30/30 (100%)	88.7% - 100%	35.1	3.88
Positive Matrix Control	10/10	26.8	1.26	10/10	26.5	0.43	10/10	26.4	0.76	30/30 (100%)	88.7% - 100%	26.6	1.05
Negative Control[1]	10/10	35.0	0.98	10/10	35.0	1.44	10/10	35.4	1.46	30/30 (100%)	88.7% - 100%	35.1	1.38
Negative Matrix Control[1]	10/10	35.1	1.06	10/10	35.2	1.03	10/10	35.6	2.62	30/30 (100%)	88.7% - 100%	35.3	1.80
Total Agreement All	**97/100 (97%)**			**100/100 (100%)**			**100/100 (100%)**			**297/300 (99.0%)**	**97.1% 99.7%**		

[1] Average Ct value is calculated for the Internal Control (IC).

An additional reproducibility study was performed to assess samples that were at an intermediate concentration, below the assay's LoD but above the "high negatives" tested during the original reproducibility study. The percent positive for the intermediate member across all sites was 42.2%. This result was expected as the intermediate concentration should be positive in the range of 5 - 95% as the samples were lower concentration than the LoD concentration (≥ 95% positive) and higher than the "high negative" concentration (< 5% positive).

Panel Member ID	Site 1			Site 2			Site 3			Total Agreement with expected result (%)	95% Confidence Interval	Overall Average C_T Value	Overall %CV
	Agreement with expected result	AVE C_T	%CV	Agreement with expected result	AVE C_T	%CV	Agreement with expected result	AVE C_T	%CV				
Intermediate	13/30*	40.4	2.10	12/30*	40.5	3.50	13/30*	40.5	2.07	38/90* (42.2%)	32.5% - 52.5%	40.5	2.55
Positive Control	10/10	35.2	0.88	10/10	34.4	0.37	10/10	35.1	2.64	30/30 (100%)	88.7% - 100%	34.9	1.88
Positive Matrix Control	10/10	26.5	0.78	10/10	26.5	0.86	10/10	26.3	1.12	30/30 (100%)	88.7% - 100%	26.4	1.00
Negative Control[1]	10/10	34.9	1.30	10/10	35.1	1.33	10/10	35.0	1.26	30/30 (100%)	88.7% - 100%	35.0	1.28
Negative Matrix Control[1]	10/10	35.4	1.29	10/10	35.1	1.72	10/10	35.6	1.43	30/30 (100%)	88.7% - 100%	35.4	1.55

* Number positive

[1] Average Ct value is calculated for the Internal Control (IC).

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

APR 16 2009

Kristine Schraufnagel
Quality Assurance Officer
Prodesse, Inc.
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Re: k090239

Trade/Device Name:	ProGastro™ Cd Assay
Regulation Number:	866.2660
Regulation Name:	Microorganism differentiation and identification device
Regulatory Class:	Class I
Product Code:	LLH
Dated:	January 30, 2009
Received:	February 2, 2009

Dear Ms. Schraufnagel:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to such additional controls. Existing major regulations affecting your device can be found in Title 21, Code of Federal Regulations (CFR), Parts 800 to 895. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21

This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Office of In Vitro Diagnostic Device Evaluation and Safety at 240-276-0450. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). For questions regarding postmarket surveillance, please contact CDRH's Office of Surveillance and Biometric's (OSB's) Division of Postmarket Surveillance at 240-276-3474. For questions regarding the reporting of device adverse events (Medical Device Reporting (MDR)), please contact the Division of Surveillance Systems at 240-276-3464. You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (240) 276-3150 or at its Internet address http://www.fda.gov/cdrh/industry/support/index.html.

Sincerely yours,

Sally A. Hojvat, M.Sc., Ph.D.
Director
Division of Microbiology Devices
Office of *In Vitro* Diagnostic Device
Evaluation and Safety
Center for Devices and
Radiological Health

Enclosure

Attachment C
Indication for Use

510(k) Number (if known): K090239

Device Name: ProGastro Cd Assay

Indication For Use:

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Prescription Use ___X___ And/Or Over the Counter Use ____.
(21 CFR Part 801 Subpart D) (21 CFR Part 801 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE; CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of In Vitro Diagnostic Device Evaluation and Safety (OIVD)

Division Sign-Off
Office of In Vitro Diagnostic Device
Evaluation and Safety

510(k) K090239

Division Sign-Off

Office of In Vitro Diagnostic
Device Evaluation and Safety